

ABSTRACT

What is disclosed herein deals with low to medium pressure, high temperature, all ceramic, air-to-air, indirect heat exchangers, novel ball joints, high load-bearing ceramic tube sheets, and tube seal extenders for ceramic tubes that are useful in such heat exchangers. Also disclosed are new and novel systems used in new and novel industrial processes such as chemical processing, sludge destruction and the production of particulates such as, for example, carbon black. Systems utilizing several heat exchangers are also disclosed.